

CLAIMS

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- 5 1. Aqueous suspension of precipitated silica, characterized in that its solids content is between 10 and 40% by weight, its viscosity is lower than 4×10^{-2} Pa.s at a shear rate of 50 s^{-1} and the quantity of silica present in the supernatant obtained after centrifuging the said suspension at 7500 revolutions per minute for 30 minutes represents more than 50 % of the weight of the silica present in the suspension.
- 10 2. Suspension according to Claim 1, characterized in that its solids content is between 15 and 35 % by weight.
3. Suspension according to Claim 1 or 2, characterized in that its viscosity is lower than 2×10^{-2} Pa.s at a shear rate of 50 s^{-1} .
- 15 4. Suspension according to one of Claims 1 to 3, characterized in that the quantity of silica present in the supernatant obtained after centrifuging the said suspension at 7500 revolutions per minute for 30 minutes represents more than 60 %, preferably more than 70 % of
- 20 the weight of the silica present in the suspension.
5. Suspension according to one of Claims 1 to 4, characterized in that the quantity of silica present in the supernatant obtained after centrifuging the said suspension at 7500 revolutions per minute for 30 minutes
- 25 represents more than 90 % of the weight of the silica present in the suspension.
6. Suspension according to one of Claims 1 to 5, characterized in that the particle size distribution of the agglomerates in suspension is such that their median
- 30 diameter D_{50} is smaller than $5 \mu\text{m}$ and the deagglomeration factor F_D is greater than 3 ml.
7. Suspension according to Claims 1 to 6, comprising a filter cake originating from a reaction of precipitation of silica and crumbled.
- 35 8. Suspension according to one of Claims 1 to 7, including aluminium in a quantity such that the Al/SiO_2 weight ratio is between 1000 and 3300 ppm.
9. Process for the preparation of a suspension according to one of Claims 1 to 8, including:

(A) a reaction of precipitation of silica by action of an acidifying agent on an alkali metal (M) silicate, in which:

5 (i) an initial base stock is formed, comprising a proportion of the total quantity of the alkali metal silicate introduced into the reaction, the silicate concentration expressed as SiO_2 in the said base stock being lower than 20 g/l,

10 (ii) the acidifying agent is added to the said initial base stock until at least 5 % of the quantity of M_2O present in the said initial vessel stock is neutralized,

15 (iii) acidifying agent is added to the reaction mixture simultaneously with the remaining quantity of alkali metal silicate such that the ratio (quantity of silica added)/(quantity of silica present in the initial base stock) is between 10 and 100;

20 (B) the separation from the reaction mixture of a precipitation cake which has a solids content of between 10 and 40 %;

(C) the deagglomeration of the said cake to obtain a suspension of low viscosity.

10. Process for the preparation of a suspension according to one of Claims 1 to 8, including:

25 (A) a reaction of precipitation of silica by action of an acidifying agent on an alkali metal (M) silicate, in which:

30 (i) an initial base stock is formed, comprising at least a proportion of the total quantity of the alkali metal silicate introduced into the reaction, and an electrolyte, the silicate concentration, expressed as SiO_2 , in the said initial base stock being lower than 100 g/l and the electrolyte concentration in the said initial vessel stock being lower than 17 g/l;

35 (ii) the acidifying agent is added to the said base stock until a pH value of the reaction mixture of at least approximately 7 is obtained;

(iii) acidifying agent, and if appropriate, the remaining quantity of the silicate are added

simultaneously to the reaction mixture;

(B) the separation from the reaction mixture of a precipitation cake which has a solids content of between 10 and 40 %;

5 (C) the deagglomeration of the said cake to obtain a suspension of low viscosity.

11. Process according to Claim 9 or 10, in which, after stage (B), a quantity of silica powder is added to the said precipitation cake, such that the solids content
10 of the silica-enriched cake is between 10 and 40 %.

12. Process according to one of Claims 9 to 11, in which, in stage (C), the said precipitation cake is diluted with water.

13. Process according to one of Claims 9 to 12, in which, in stage (C), the precipitation cake is crumbled mechanically by wet grinding or by ultrasonic treatment.

14. Process according to one of Claims 9 to 13, in which, in stage (C), a chemical crumbling is carried out simultaneously with the mechanical crumbling by acidifying the silica suspension so that its pH is lower than
20 4.

15. Process according to one of Claims 9 to 13, in which, in stage (C), a chemical crumbling is carried out conjointly with the mechanical crumbling by introducing
25 sulphuric acid and sodium aluminate simultaneously so that the pH of the suspension remains between 6 and 7 and the Al/SiO₂ weight ratio is between 1000 and 3300 ppm.

16. Process according to one of Claims 9 to 13, in which, after stage A (iii), sulphuric acid and sodium aluminate
30 aluminate are added simultaneously to the reaction mixture, so that the pH of the mixture remains between 6 and 7 and the Al/SiO₂ weight ratio is between 1000 and 3300 ppm, before proceeding to stage (B).

17. Process according to one of Claims 9 to 11, in which, in stage (C),
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(i) the said precipitation cake is washed with one or more organic solvents and the cake thus washed is dried to obtain a silica powder, and

(ii) a quantity of the said silica powder is

suspended in water, such that the solids content of the final suspension is between 10 and 40 %.

18. Process according to Claim 17, in which the solvent is chosen from ethanol, ether or an ethanol/ether mixture.

19. Use of a suspension according to one of Claims 1 to 8 for the production of anticorrosion coatings.

20. Use of a suspension according to one of Claims 1 to 8 for the preparation of concretes.

21. Use of a suspension according to one of Claims 1 to 8 in the preparation of paper.

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